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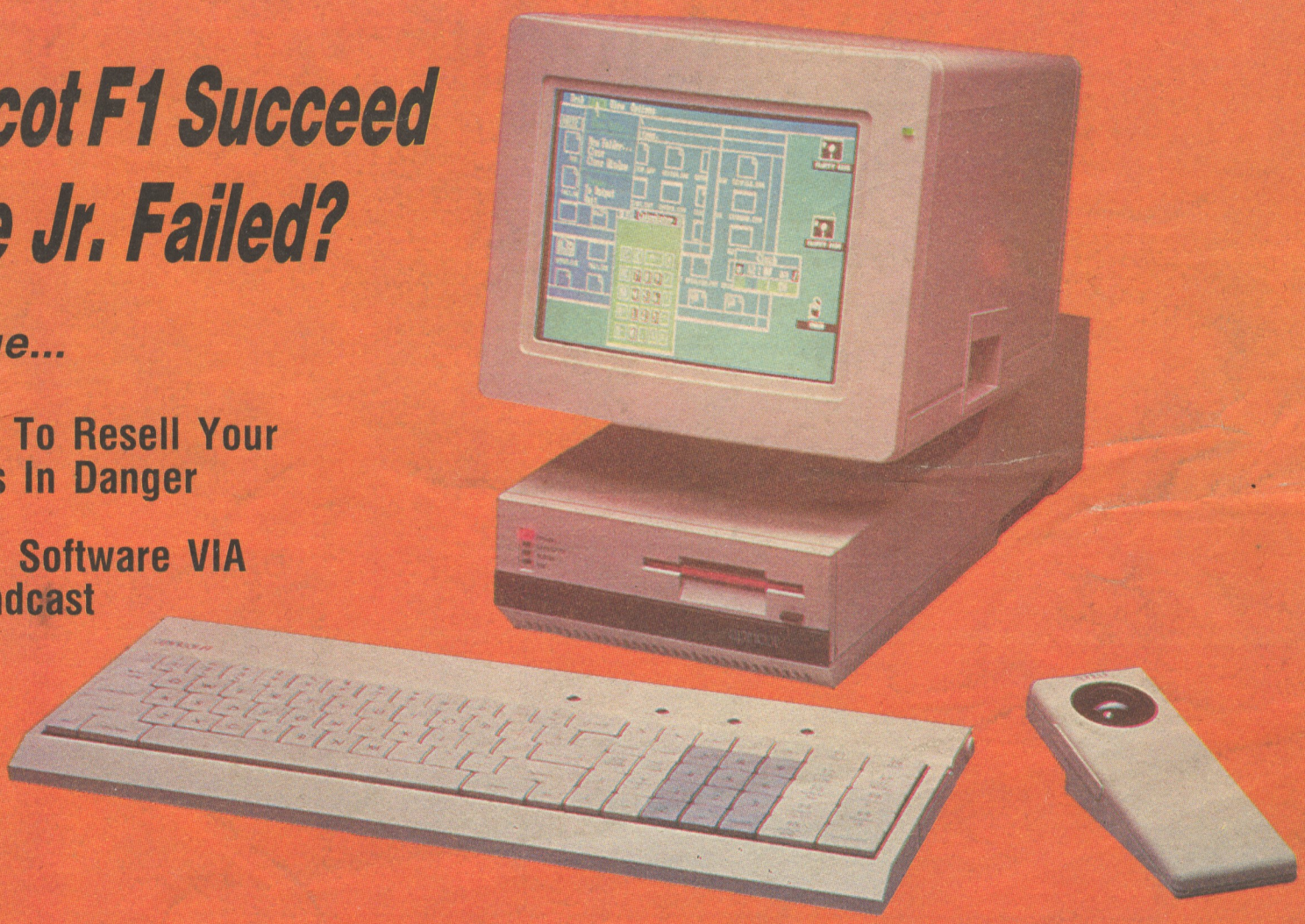
COMPUTER SHOPPER™

NEW & USED BARGAINS

Will Apricot F1 Succeed Where Jr. Failed?

In This Issue...

- Your Right To Resell Your Software Is In Danger
- Softcast — Software VIA Radio Broadcast



See Advertiser's Index Page 245

ATARI

The Atari 520ST Revealed

by Wyn Rostek

Introduction

In spite of a huge interest in the new Atari ST computers, there is also a dearth of information on these machines. As a result, there is a lot of false information being passed off as the "truth" concerning these machines. As one of the people who has extensively used the 520ST, I'll try and give you the best information that is available today. Keep in mind however that Atari has not yet decided all the details about this series of computers.

ST Design Criteria

When Atari announced the new ST series of computers, there were going to be two machines initially released. The first machine was called the 130ST and had 128K of RAM. The second machine was the 520ST, and it was supposed to be equipped with 512K of RAM. Both machines were identical except for the amount of memory. Each had connections for a printer, a modem, a ROM cartridge, floppy disk drives and hard disk drives. They also included a MIDI (Musical Instrument Digital Interface) bus interface.

The ST machines were designed to have the system software in ROM. The video display design was for three different resolutions, Low Res was 320 by 200 pixels, Medium Res was 640 by 200 pixels, and High Res was 640 by 400 pixels. The Low Res could display 16 colors, the Medium four colors and the High Resolution mode was a monochrome display. Both ST machines were supposed to have an RF modulator built-in so that a TV could be used instead of a monitor. Of course, if you actually used a TV, you were limited to the low resolution display.

The ST systems were also designed to have built-in sound from a sound chip. The feature that generated the most excitement was the user interface. The ST computer displays looked a lot like an Apple Macintosh even down to using a mouse for input. The exciting difference between the Mac and the ST was that all ST computers had color, and they cost a lot less (⅓ less) than a Mac.

ST Production Configuration

As is often the case in the personal computer business, the machine that was announced is not the machine configuration that is being made ready for sale to users. Some things have improved, and some desirable features are missing. One of the pleasant surprises is that the already unbelievably low price has become even lower!

Among the missing features I would have like to have kept was the operating system in ROM. The 520ST will have the operating system on disk, and this will be loaded into RAM upon booting. This means that in a 512K machine, only about 225K RAM will be left over for your programs. Of course, for years we worked with 56K or less space for our programs. The newer programs are more complex than those of yesterday, but 225K should be plenty for most programs.

Another of the missing features that may hurt is the lack of a programming language. A lot of people were looking forward to having BASIC and Logo in ROM. The 520ST only has a boot routine in ROM, and BASIC may not be available for some time, if ever. There is still a possibility that Logo may become available on disk.

Look for a new model to be introduced that offers more of the features that the original 520ST was supposed to have. The next machines will have BASIC, LOGO, and GEM in ROM and come with Jack Paint and Jack Write. These second generation STs will also have new model numbers even though they are really mainly 520STs with software in ROM. Keep in mind that an announcement of any new machines is months away and Atari has a way of changing its mind.

At the present, the 520ST now being released has some major differences from the original 520ST. The Atari 130ST has been dropped from the product lineup, and probably will never go into production. There should be a new machine announced in a few months that is closer to the original 520ST in that it will have the operating system software in ROM. Look for this new system to have a different number even though it will have only minor differences from the 520ST. In the future, look for Atari to introduce machines with even greater RAM capabilities. These future machines may sport as much as 4Mbyte of RAM.

Inside The 520ST

Lets take a look at what the 520ST is made of. The Atari 520ST uses the Motorola 68000 CPU and comes with 512K RAM arranged as 256K by 16 bits. The 68000 is a 32 bit chip in that the internal registers are 32 bits wide, but the external data path is only 16 bits wide. (The IBM PC has an 8 bit wide data path with 16 bit wide registers.) I prefer to think of the ST as a 16 bit machine, but if you play by IBM's rules, you'll have to call it a 32 bit machine.

The 68000 is a microprogrammed CPU. This means that the CPU is really a combination of hardware and software. The actual CPU hardware is very simple, consisting of a handful of registers and a very simple ALU. (The ALU is the Arithmetic/Logic Unit, the part of the CPU that actually adds numbers, etc.) The instructions that the CPU executes are determined by an interpreter that is built into the CPU. The machine instructions are really interpreted by the micro-code program.

If every machine instruction is being performed by an interpreter, you might think that the CPU would be very slow. Actually, the machine is fairly quick, it can add two 32 bit numbers in four clock cycles. The Atari 520ST will use an 8MHz clock, so a register to register 32 bit add will take only 500 ns!

What does the microprogrammed CPU mean to the user? The instruction set is determined solely by what the designer thinks it should be. As a result, the instructions of the 68000 can perform are very powerful. The instructions of the 68000 look just like those of a mini-computer, not like the micro-computers of the past. This means that the code generated by compilers should be somewhat smaller than the code for older CPUs. Your programs should be quicker and take less space on this new machine.

One of the largest drawbacks of the Atari 520ST is that it is a closed system with no expansion card slots inside the machine. This isn't as large a problem as it may first seem. The basic system has enough features so that it should work for more than 90% of the jobs that personal computers are used for. Atari, and others may also use the DMA channel to externally expand the system. By not allowing cards to be added to the bus, Atari claims that the bus can be "tuned" for greater efficiency. Look for future products from Atari that use the DMA port.

The 520ST has a parallel port for driving a printer, and a serial port that can be used with a modem. The serial port can run at rates between 50 and 19200 baud for the more common asynchronous communication, and clock speeds of up to 1MHz for synchronous communication, and clock speeds of up to 1MHz for synchronous communication is possible.

The ST system will support only 2 floppy disk drives, not 4 as sometimes reported. The drives use a high speed serial interface instead of the more common parallel interface. There are two types of floppy drives for the system, a single sided, double-density 3½-inch drive that holds about 1Mbyte. It appears that the only drive that will be available initially is the 500K model. The original development systems came with one of each of the floppy drives.

There is also a DMA channel to support a hard disk drive and Atari says that a 10M hard disk for the system will cost $399. (The initial hard-disk drives for the development systems sold for $750.) The maximum speed of the DMA channel is 1.33 Mbyte-per-second, and a lot of people seem to think that this is the transfer rate for the drives. The transfer rate of the 520ST DMA channel is over 10 million bits-per-second, whereas most hard disk drives will only transfer at a rate of 5 million bits-per-second. Atari has not announced the transfer rate for their drive, but don't expect it to be any higher than 5 million bits-per-second.

ST Peripheral Support

The MIDI bus interface included with the 520 allows the ST to be connected to electronic instruments such as music synthesizers. This feature would be much more useful if there were more inexpensive synthesizers with MIDI bus interfaces available to the consumer. Perhaps Atari knows something we don't. The MIDI bus can also be used as a simple way to network ST computers, but as far as I know, no one is developing the software at this time. I do expect this software to become available when the number of STs make it worthwhile.

The system has built-in sound using a programmable sound generator. The PSG as Atari refers to it can generate tones as low as 30 Hz and as high as 125 KHz. There are three channels in the PSG and you can mix tones with noise. You have control over the amplitude of the sound, and can manipulate the envelope.

A cartridge port is provided to allow you to use ROM packs. I personally suspect that this will get very little use with ROM cartridges. Atari points out that the 128K of memory space could be used for connecting a battery-backed clock to the system, and software manufacturers could use the port to hold a ROM pack acting as a "key" to protect software and still allow the user to make as many backup copies as needed. This is a scheme being promoted by software publishers that has little user support, however, its presence in the ST may induce additional software development for the ST.

The video display has three different resolutions very cleverly named by Atari: High, Medium and Low. In the low resolution mode, the display is 320 by 200 pixels with 16 colors. The medium mode gives 640 by 200 pixels with four colors and high resolution gives a monochrome display of 640 by 400 pixels. The colors can be selected from a pallet of 512

Continued on page 127

Applying The Atari

by Jeff Brenner

This month marks the first anniversary of the "**Applying The Atari**" column. A lot of work has gone into this column over the past year to develop practical applications for your Atari for the home, office and school, and to teach you more about the capabilities of this versatile machine. Of course, some bugs and errors have been made along the way, but the overwhelming support from individual readers and from users groups indicates that this column has been a success and, makes writing it all the more worthwhile to me personally.

Responses to this column in the form of questions, contributions and comments from readers have increased more than ten fold over the past six months and indeed this is a healthy sign. Hopefully more advertisers for Atari products will recognize this growing audience and will place their ads in *Computer Shopper*. This will not only add more interest to the Atari section (many Atari owners read computer magazines for the ads as much as the articles) but will enable *Computer Shopper* to devote more space for Atari articles in the future.

The new Atari computers have created a great deal of enthusiasm among Atari fans and among many software developers. Yet with the Commodore Amiga slated to be out by the time you read this, there is some caution and concern out there as Computer War II, battle of the Mac lookalikes approaches. In any event, I won't be giving up any column space to programs for the new Atari units until there is a significant number of them out there.

Even more exciting stuff is in store for your Atari in the months ahead. In fact, next month we embark upon our grandest project ever, an artificial intelligence program. This month, we'll discover how ATASCII Lister works, incorporate a light pen into a BASIC drawing program, and redefine keys on the Atari numeric keypad. Ah, but first your letters...

Reader Mail

Q. I have an Atari 800XL and would like to use it with an Olympia Compact 2 typewriter/printer which has a built-in Centronics parallel port. Do you know of any interface cable which would connect the Olympia Compact 2 to the parallel processor bus which is in the back of the Atari 800XL? In general, what interfaces work well between the Atari 800XL and printers with Centronics parallel ports?

Jack Epstein
Kingston, NY

To my knowledge, there are no printer interfaces available which connect to the parallel processor bus of the XL. Unfortunately, the newer XE line, which replaces the XL computers, does not have this parallel processor bus, which makes it unlikely that any products will be developed to utilize this bus. The available interfaces plug into the serial port on the Atari.

Any Atari printer interface should work well between your XL and your Olympia. An interface either works or doesn't work, so there is no real way to judge how good one is compared to another. You can, however, spend a little extra to get an interface equipped with a buffer. This would allow the computer to quickly transfer its data to the buffer and then be free for programming while the buffer independently sends the data at a slower rate to the printer. Some interfaces for the Atari for parallel printers (aside from Atari's 850): ape Face, Microbits 1150, Cardco AT, Interfast.

A suggestion for two paragraphs in your next "Applying The Atari" column:

One would cover how the multi-luminance program presented in the May 1985 issue on page 54 could have Program Perfect checksums listed as both programs contain line numbers 30000 - 30130. (It is not a pretty sight watching one program eat up the other.)

The other paragraph, of course, would cover why you didn't tell us your method in the June issue.

Your column is interesting and informative and I enjoy reading it. I hope Atari's new machinery revives all kinds of interest in Atari.

Donald McEntee
Webster Groves, MO

Indeed, both the multi-luminance program and Program Perfect contain identical line numbers. You are one of the few readers who realized that the problem in entering the multi-luminance program was due to the coinciding line numbers and not from an error in Program Perfect itself.

The multi-luminance program was created prior to the development of Program Perfect and unfortunately the conflicting line numbers were not apparent until after publication. I apologize for any inconvenience this may have caused you or other readers.

Each line of the multi-luminance program that is entered will take the place of a line of the executing Program Perfect - a mess. The whole ordeal eventually ends in an error message. I agree that the sight of one program being consumed by another is ugly, at best. To the novice Atarian, such an occurrence can be a terrifying experience. Listed under the heading, "Multi-Luminance Revision," is a renumbered version of the original program. This version can be entered with Program Perfect. Note that this renumbered version begins at line 25000. Therefore, if the demonstration program (Program 2 in May column) is being used with this renumbered version, line 20 of the demo should be changed from:

```
20 GRAPHICS 0:GOSUB 30000:RESTORE 50
```

to:

```
20 GRAPHICS 0:GOSUB 25000:RESTORE 50
```

I only wish this could have happenedd in the April issue so I could have dismissed it as an April Fools' joke. Oh well...there's always next year!

MULTI-LUMINANCE PROGRAM

```
KPJ 25000 REM MULTI-LUMINANCE PROGRAM
KQJ 25010 REM BY JEFF BRENNER
CNJ 25020 RESTORE 25070:I=0
FPJ 25030 READ NUM:IF NUM=-1 THEN 25050
YLJ 25040 TOT=TOT+NUM+I:POKE 1664+I,NUM:I=I+1:GOTO 25030
REJ 25050 IF TOT<>43100 THEN PRINT "ERROR-CHECK PROGRAM":STOP
MRJ 25060 A=USR(1664):RETURN
TIJ 25070 DATA 104,173,48,2,133,204,173,49,2,133,205,160,26,169,10
XTJ 25080 DATA 153,230,6,136,208,250,160,0,177,204,9,128,145,204,160
UOJ 25090 DATA 3,177,204,9,128,145,204,160,6,177,204,9,128,145,204
OFJ 25100 DATA 200,192,28,208,245,169,197,141,0,2,169,6,141,1,2
TTJ 25110 DATA 173,14,212,9,128,141,14,212,96,72,152,72,173,11,212
TFJ 25120 DATA 201,7,240,18,201,8,240,14,230,204,164,204,185,231,6
SFJ 25130 DATA 141,23,208,104,168,104,64,169,0,133,204,240,238,-1
```

First I want to state how much I enjoy your column and the friendly attitude of your approach. I think the software presented is intelligently selected and more useful to the serious beginner than the childish nonsense found in the pop Atari mags. Pity I can't do an accurate job of entering the programs.

Part of the problem, in addition to my own shortcomings, is the minisclule amount of space allotted for the program listing. I cannot read the list without a magnifier and then I find it difficult to debug and/or adapt due to the lack of REM statements. All of this I attribute to the publishers of Computer periodicals selling Atari down the river and counting them out instead of down. Their lack of support for Jack Tramiel is self-defeating because he is one dynamic guy who can breathe new life into the dying so called "low-end" computer industry.

I believe that in the future the Atari section will be significantly expanded as well as the respect the computer so greatly deserves.

Donald Nadler
New Hempstead, NY

Many readers have written that the small space provided for the program listings makes it difficult to read the programs. However, enlarging the program listing would mean less room for other items in the column. Program Perfect was developed to help readers to enter the programs and I highly recommend that you take advantage of this utility when you enter programs from this column.

I agree with your comments about the lack of support given to Atari by most computer magazines. Unfortunately, this has always been the case. Names such as "game machine" and "toy computer," branded on the Atari in its first years of existence, have obscured the true power and versatility of this machine. I feel, though, that there is currently some genuine interest and support among these magazines for Jack Tramiel and for the new Atari. If the new Atari computers prove successful, we may witness a change in the way the Atari computers (the new ones, at least) are treated. Meanwhile, we should give much credit to *Computer Shopper's* editor-in-chief, Stan Veit, for realizing the existence of a large base of Atari users in need of information and for providing a section in this magazine for them.

I too hope that, with the rebirth of Atari, we'll see a growth in Atari related articles and advertisements in this magazine and in others as well.

Chess is said to have originated in India, and one of its early proponents is said to have taught his king how to play. The monarch, pleased with his new knowledge, asked his teacher to name his own payment, and the teacher made a very simple request. He asked to have a grain of wheat placed on the first square of the chessboard, two grains of wheat on the second square, four on the square after that, and so on, doubling the previous amount of each successive square. That seemed like an easy request and the satrap ordered his aides to start carrying it out, but of course they could not finish. There was not enough wheat in the whole kingdom.

I thought that you or your readers might like to see a simple BASIC program that describes the situation. I have used pennies instead of grains of wheat, and the amount soon exceeds the Gross National Product. To use the program, just press the RETURN key repeatedly and the accumulated total for successive squares will appear on the screen. To end the program just type in 99 or any other number before presssing the RETURN key.

Carl Wade
Fort Collins, CO

CHESSBOARD PAYOFF

```
MGJ 10 REM CHESSBOARD PAYOFF
VCJ 20 REM BY CARL WADE
UTJ 30 OPEN #1,12,0,"E:":PRINT "Press RETURN to continue"
AIJ 40 N=1:POW=1:SUM=1:H=100:T=10*H:MIL=T*T:BIL=MIL*T:TRIL=BIL*T
GZJ 50 DIM SP$(1):SP$=CHR$(32):TRAP 70:INPUT #1;ZK
EAJ 60 N=N+1:POW=POW*2:SUM=SUM+POW
YHJ 70 PRINT N;".";SP$;:IF SUM<H*TRIL THEN 90
NLJ 80 PRINT SP$;"$";INT(SUM/H)/TRIL;SP$;"TRILLION":GOTO 170
GNJ 90 IF SUM<H*BIL THEN 110
HIJ 100 PRINT SP$;"$";INT(SUM/H)/BIL;SP$;"BILLION":GOTO 170
IPJ 110 IF SUM<H*MIL THEN 130
IGJ 120 PRINT SP$;"$";INT(SUM/H)/MIL;SP$;"MILLION":GOTO 170
XLJ 130 IF SUM<H THEN 150
AKJ 140 PRINT SP$;"$";SUM/H:GOTO 170
XFJ 150 PRINT SUM;SP$;"CENT";:IF SUM>1 THEN PRINT "S";
WSJ 160 PRINT
PVZ 170 TRAP 60:INPUT #1,ZK:END
```

The program is listed under the "Chessboard Payoff" heading. You are being sent a 3-D Holographic Sticker for your interesting contribution. Thanks for writing.

Continued on page 130

Summer CES Show Continued from page 55

hang up to 512K bytes off your 64 or 128. For the 128, special basic commands (STASH and FETCH) allow 64Kbyte transfers to take place. Under CP/M, the additional memory is treated as a RAMDISK. Also shown was the MPS 1000 printer, the 1902 RGBI/Composite monitor and The Commodore Mouse. As usual, Commodore has not quoted any suggested retail prices, so check your local dealer or the *Computer Shopper* for the best prices.

Amiga, you say? Not here. Not even a hint. Inside sources are saying that Amiga will have its own unveiling to the media in the future.

Spectravideo

After many questions about its stability Spectravideo has restructured and now is part of the Bondwell Holding Company, a Hong Kong based electronics concern, and let loose with a salvo of new products. Most noticeable was the Bondwell 2 lap-top with a built-in 3.5-inch drive, 80x25 LCD screen plus software (MicroPro's Star series and Scheduler Plus) for under $1000, with a September delivery date. Also shown were 3 new CP/M portables (Bondwell 12, 14 and 16, the 16 features speech synthesis), 2 IBM PC clones (the Bondwell 34 and 36, the 36 being an AT clone) and the SVI-738 (aka the MSX Express) for $595 with a September delivery date. The MSX Express could prove interesting: First of all its MSX-compatible, and uses the Yamaha's AVDP chip (the late lamented TI TMS 9228 for 80 columns) and built-in 3.5-inch disk drive, RS232 and Centronics interfaces.

New Computer Firms

HiTech International has teamed up with the Korean electronics giant **Samsung** to sell Samsung's PC AT clone in the U.S. for $4,395, which includes 1 meg of memory, 2 serial ports, a parallel port, a Hercules-compatible graphics card, and 30 megs of hard disk.

Also new to our shores is a British firm, **Amstrad,** which is showing their CPC6128 computer, which offers 128K of memory, built-in 3-inch (not 3.5-inch!) drive, CP/M, AMSDOS, Basic, Logo, RGB monitor, word processing (WordStar) and entertainment software for $800.

Only time will tell if either of these products will succeed on our continent. Samsung is well-known for their TV and microwave products here in the U.S.; Amstrad (according to the releases) has had reasonable success back in Britain with their computer products.

Other Hardware

Several companies were displaying new hardware at CES:

Epson showed off many new products, most of which were displayed at Comdex a month earlier, with the HS-80 ink-jet printer showing some real nice quiet printing in a very compact (about 14" W x 5" L and 3.5" H) size. Like the HP Thinkjet the HS-80 will also run off of NiCad's as well. Unlike most of Epson's printers the HS-80 prints in only one direction. Epson also uncorked two new daisy wheel printers that run at 10 and 20 cps.

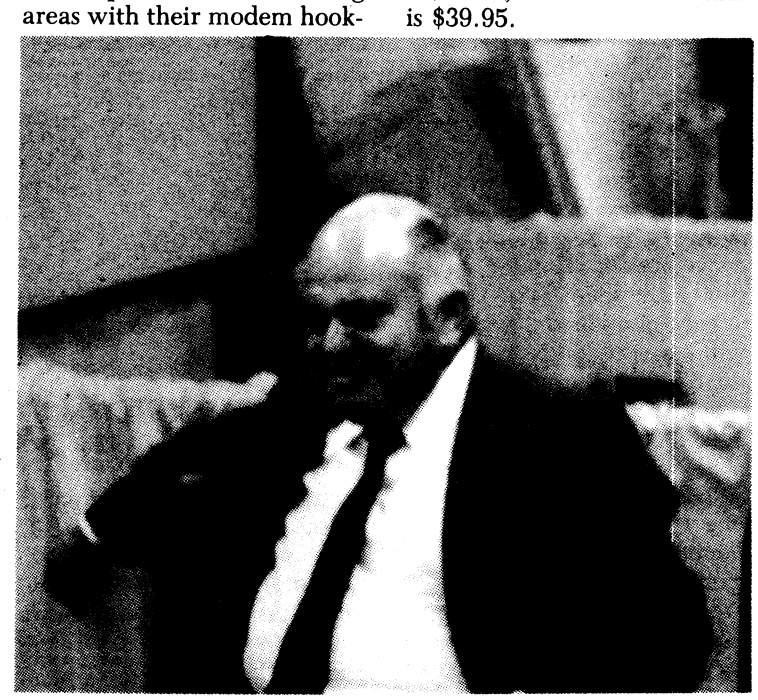
Okidata showed off their new Okimate 120, designed for Commodore computers only. The Okimate 120 runs at 120 cps bi-directionally, and at 60 cps in its NLQ mode, with a special Commodore interface. The Okimate 120 will be a mass-market item with a suggested retail price of $269.

Star Micronics also introduced a mass-market printer for the Commodore 128, known as the SL-10. It is similar to Star's SG-10C printer.

Smith-Corona and **Brother** both showed spelling-correction modules that hook onto their new typewriter/printer models. Smith-Corona also modified their Messenger Module computer interface to print bi-directionally and improve "white spacing" speed.

Casio introduced a very lightweight typewriter line called Casiowriter, with the CW-30 model being of interest to computer folks. The CW-30 not only acts as a regular typewriter but adds a built-in modem and both Centronics and RS232 interfaces, and accepts regular or thermal paper using a heat transfer ribbon good for 50,000 characters.

Avatek is a relatively new name to the modem scene and has garnered attention by some of their ads picturing very statureque homes and living areas with their modem hooked up to a computer. Their three modems runs from a SRP of $69.95 (300 bps, full manual) to $299.95 (1200 bps, Hayes compatible.) They also introduced a 600 bps 113-compatible modem for $99.95.



Chairman of Atari - Jack Tramiel, at Consumer Electronic Show

CE Software

Software is still plentiful though software producers still suffer the same problems as hardware vendors - some are very successful, others are not. Here's what this summer's CES has to offer in software:

Access Software showed off the sequel to Beach Head aptly named Beach Head II for Commodore 64, Apple, Atari and IBM machines. In addition to the sequel Access also released Mach 5, an enhanced utility for Commodore 64 and 1541 drive users with a plethora of features: loads programs five times faster, Screen Dump to printer, AutoRun a Basic program, and a disk management facility, just to name a few of its features. Mach 5 disk and cartridge SRP is $34.95, Beach Head II's SRP is $39.95.

Activision has busily been shifting their product line away from the arcade games that made their initial fortune towards the "creativity" sector. To this end their new announcement of Gary Kitchen's GameMaker: The Computer Game Design Kit, is being touted as a way for non-programmers to create their own games. Other wares shown at the show include Hacker, a Commodore 64 game which you accidentally break into a system that you know nothing about and with little clues or hints you have to find out what system you are on and what's going on. A 3rd quarter release date is set for this program. Approximate playing time for Hacker is about 60 hours according to Activision rep. Other titles slated for release that were shown are "Alter Ego," a program that allows you to examine what your life would be like if the situations were different, "Fast Tracks: The Computer Slot Car Construction Kit" where you build AND race the car you design. "The Complete Computer Fireworks Celebration Kit" which allows you to create dazzling displays that can be used to make custom greeting card disks, and a program simply called "There's someone living inside my computer", which the Activision press release states that they are showing the results of their preliminary research at the show. However, Activision has stated that more research is needed and will be published on a periodic basis, but not to expect a home version much before the Fall of 1985. (Aww...and I wanted to chat with one of them to find out why my program crashes so often...oh well...)

Activision also announced the pact with LucasFilm to distribute their software titles outside the U.S. market.

Epyx showed off their new wares "Jet Combat Simulator," which simulates a F-15 fighter; "The Eidolon" and "Kronos Rift," both from LucasFilm; "Winter Games," a successor to the popular "Summer Games" series; "The World's Greatest Football Game," a football version of the "greatest game" series (the World's Greatest Baseball Game" is updated, too.)

For you Temple of Apshai fans, hang on: the temple has now become a trilogy with improved graphics, 1400

Continued on page 174

Randy's Ravings Continued from page 55

The only thing that concerns me is that this is an indication that the card wasn't thoroughly tested prior to its release. I find it also hard to believe that of all the possible system configurations and the length of time that the card was out that I had to discover this bug. For those of you who have the cards and may be concerned we will publish the fix in next month's issue.

Last month in my column I was discussing terminal emulators and one of my gripes was lack of XMODEM. Now we have it from two sources. Paul Charlton has added XMODEM to FastTerm and Richard Bryant, PTERM author, has added XMODEM to PTERM as well. I am in the process of obtaining both programs for review and will report back as soon as I have examined each one.

On the review scene, I have also been in contact with Craig Miller of Millers Graphics, who will be sending a review copy of his advanced diagnostics program for the /4A. Anybody else who has a program they wish to be reviewed just send it in to me in care of the magazine and we'll get right on it. Even if its a PD program send it in - we got a very wide national audience.

And speaking of audiences I'd like to thank those of you who showed up at our CES booth in Chicago on Sunday and Monday while I was there - it was nice knowing that there are folks out there who like what we are doing.

32/16 Price Increase: Steve Borowiak of Top Radio has informed me due to increased costs the price of the 32/16 memory expansion upgrade has gone up to $129.95. The assembled and tested version remains the same price, $159.95. See the June 1985 issue for details about this product.

Next Month: More for the TI community: reviews and news. ●

CES SHOW

Randy's Ravings at Summer CES Show

by Randy Holcomb

For everyone in the electronics and computer industry, June and Chicago usually mean the International Consumer Electronics Show, and this year is no exception. What transpired prior to the show's opening was even more intriguing than some of the show's activities: Atari said that they would not be at the show, then just weeks before the show opened up they re sciended and were present at the show. Many software vendors also did not exhibit but were represented by software distributors who had booths at the show.

In terms of computers, this show seemed to be taking it on the chin - there seemed to be fewer exhibitors with some estimates that the number of computer exhibits were down by almost one-third. However, even with this decline there was plenty to see at this summer edition of the CES.

Atari

Atari, after announcing that they would be present at CES after all, had the most attended booth for computer items and with good reason: they were showing off their new 260ST computer, as well as their 520ST. The 260ST is a 520ST with 256Kb of memory and a built-in 3½-inch drive. It is expected to sell for $400 with monochrome monitor and a mouse. The 260ST is intended for the mass-merchandisers, while the 520ST remains in the domain of the computer specialty stores. Also announced by Atari is a substantial price break for purchasing a software development system which consists of the 520ST, two 3.5-inch drives, both the RGB and hi-res monochrome monitor, and development software which includes a C compiler and associated utilities. The only requirement was that you presently have a current software product out on the market in order to acquire the system. Atari has also stated that they are NOW SHIPPING 520STs to those individuals who ordered them through the local users groups, in addition to the sales of the machine in Canada.

The real wild item from Atari was a demonstration of a Philips CD ROM drive with an Atari interface prototype attached to a 520ST. Activenture Corporation staged the demo of the CD ROM using an encyclopedia as an example. Access to the CD ROM encyclopedia was quite impressive: an inverted data structure was devised for searching the entire contents of the encyclopedia in an extremely short time span. Your guess is as good as mine as to when you will see such an item in production but it promises quite a bit of performance and storage - like 500 megabytes.

Software for the ST series was somewhat scarce - at least one vendor (Infocom) has announced they are porting their games over to the ST. The folks from Haba (authors of Habadex for the Macintosh) were buzzing around the booth as well as some of the other folks who bought one of the early $4,000 development machines. One company was showing off a game that was completely icon-based - you rolled the mouse around to maneuver yourself and items around in the game. But it appears we'll have to wait just a little longer for more software for this machine - specially considering it really isn't out yet

Commodore

Commodore was present with both the 128 and a 128D, which makes the C128 "portable", with the power supply, disk drive, and handle built-in. The keyboard on the 128D is on a cable and attaches to the bottom of the cabinet when moving the computer around. No price was given for this package but European delivery is slated for late this year and for U.S. delivery on January 1 of '86. As for delivery of the 128, Commodore is saying late summer before it hits the dealer shelves (one of many Commodore watchers mentioned that Commodore was delivering some of their development units to software vendors the Saturday before the show opened.)

Commodore was also showing off some new machines for the international markets: the Z8000-based C-900 business computer running Coherent (a UNIX-workalike) with a 19" hi-res monitor with a 1024x800 resolution. The C-900 will multi-task and allow up to eight users, with up to 67 megs of disk storage. Also shown were their MS-DOS boxes, the PC 10 and the PC 20, whose specs read like an IBM PC and PC XT, respectively. As these are for international users it's unlikely you'll see them hit our shores.

In the peripheral scene, Commodore introduced a dual-drive version of the 1571 known as the 1572, a 1200 bps modem for the 64 and 128 series known as the 1670 Modem/1200. The 1670 has some Hayes compatibility in it and does not require an additional power supply: it plugs into the user port. Also annouced as "preliminary" is a RAM expansion cartridge for the 128, which allows you to

Continued on page 56

CD-ROM For Atari 520ST

TEXAS INSTRUMENTS

Randy's Ravings

by Randy Holcomb

This month's column is very brief due to the CES coverage (and to the fact that its SUMMER time too!) but we will be back with a full head of steam next issue.

Well, CES has come and gone, and sad to say that Myarc did not show anything during the days that I was covering the show (Sunday or Monday.) Also, no new products specifically for the TI 99/4A were introduced, so things look a little rough right now. However, we got some exciting news for you all.

First off, on July 4 the **TI Information Network** opened its doors on Delphi, a division of General Videotex Corporation. The TI Information Network is a new facility that provides users of ALL TI computers (including Business Systems and TI Professional) a place to meet, share questions and answers and retrive files and documentation from the many libraries in the network. For more information on Delphi call 1-800-544-4005. To get to the TI Information Network once you are on Delphi type "GR TI" at the Delphi "MAIN< " prompt.

Myarc RS232 Bug Discovered. I ran across this problem because of my rather unconventional configuration of having a printer off the second RS232 port but this could affect you if you use port 2 and try to use pin 19 for handshaking. After beating my head against the wall (and getting a bad headache) I ripped open the card and began tracing the handshake signal back to the TMS 9902 when I discovered that the 1489 line drier had the input and output reversed! Fortunately I was able to effect a simple 2 trace cut and wire 2 jumpers to get around the problem. I called up Myarc and asked them about this. They double checked and sure enough the artwork was wrong. Myarc has effected repairs on subsequent units being released but this card has been out for about six months now - so if you hook up a serial printer and find out that it doesn't handshake right and it's an old Myarc RS232 card, that could be your problem: but double-check your wiring and the printer with a late-model Myarc, TI or CorComp RS232 card to be on the safe side.

Continued on page 56

Atari 520ST
Continued from page 53

colors, and by setting the pallet selection "on the fly," you can display more than the 4 or 16 colors available. Really clever programming may allow you to display all 512 colors in a single display.

Looking To Tomorrow

At COMDEX Atari hinted at larger machines that may be introduced at a later date. It should be very easy for Atari to replace the 256K dynamic RAMs with 1Mbyte of RAMs to give a machine with 2Mbyte of RAM. There is a version of the ST at Atari with piggybacked 256K RAMs to give a 1Mbyte machine, and some developers are trying to do the same to their systems. There may be a problem with getting the case to fit with these piggybacked systems, but I bet that Atari will offer some 4M byte machines in the future.

Atari is also hinting that they may offer 15M byte hard drives at rock bottom prices. With 4M byte of RAM and a 15M byte hard drive, you have a very powerful system.

Atari will be offering some development systems sometime in the near future. These systems are going for $800 and include the 520ST with a single 500K drive and a monochrome monitor. The second disk will cost $200 and System documentation and software will cost $300. The only software in the ROM will be a boot routine, the GEM software will be soft loaded. Without the software and documentation, these machines will be pretty useless to developers that don't already have one of the earlier development systems.

The documentation being shipped today is mainly on other products, not the ST itself. As examples, the documentation we have on GEM is about the IBM PC version of that product, and we have documentation on CP/M 68K, but very little on the Atari DOS that is actually used in the machine.

Digital Research, Inc. wrote the DOS and GEM for the machine, and it looks like it may be July before documentation on the ST versions of these products may be available. The technical hotline to help developers doesn't exist at this time, and it appears that there is little or no software expertise on the ST at Atari. I'm still waiting for an answer to a question about a software bug, and it has been 6 weeks since I asked about it.

Several software developers are getting together to help each other until Atari or DRI gets up to speed to provide technical support. A developer group is also trying to form an organization in an effort to provide wider support for the machine.

The ST Operating System

There seems to be some confusion about the "Desktop," and the operating system. A lot of people think that the Desktop is part of the operating system, however it is actually an application program written by DRI that allows users to copy and erase files, format disks, and view and print files. The Desktop is just an application program, not really part of the operating system at all. It is just a program that allows the user to take care of the most common file operations without having to remember things like, "RM B:FILE.FOO."

A lot of people also seem to think that GEM is an operating system. It is just a set of subroutines to allow programmers to develop application programs that use icons (pictures) and a Mouse for the user interface. Atari and Digital Research, Inc. refer to GEM as

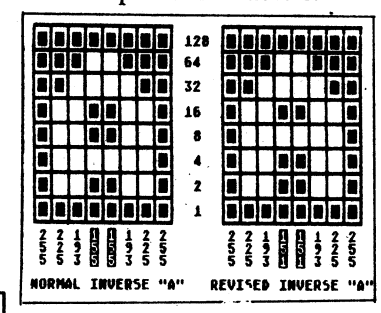
Continued on page 134

Applying The Atari
Continued from page 54

ATASCII Lister
Let's get an idea of how last month's ATASCII Lister program worked.

The ATASCII Lister does not require any character data of its own, as it uses the data stored in the Atari's character-set ROM. Actually, ATASCII Lister lists programs in the character set pointed to by location 756 (the character base address), thus enabling you to list programs in your own custom character set, or in any character set you load into the computer.

ATASCII Lister reads a program from cassette or disk. Through a machine language subroutine, each character is converted into a series of numbers which the printer interprets as graphics data. The printed graphics look exactly like the Atari's characters with one exception - the inverse "A." It just so happens that when the inverse "A" is broken down into bytes to be sent to the printer, two of the bytes equal 155. This value is automatically converted to a 13 before it reaches the printer, since the Atari's line feed code is 155, and the printer is 13. The altered pieces of data would make a mess of the character. To solve this problem, the bar of the inverse "A" is moved up one line by the program. Figure 1 illustrates this. The result is a routine which can list programs that utilize all the Atari's special characters.



Light Pen Drawing Program

Last month we discussed incorporating a touch tablet into your BASIC programs. This month, a program is presented to allow you to draw with a light pen. Many of the techniques mentioned in last month's column for reading the touch tablet have been employed in this light pen program. Of course, you must have a light pen in order to use the program. The program is listed under the "Light Pen Program" heading.

This program lets you draw in four colors on a Graphics 7 mode screen. If you have the Graphics Dump Utility listed in the March 1985 column, you could merge it with the Light Pen Program and print your artistic creations on a printer.

Before you run the program, you must determine a way for the computer to detect when you press the button on the light pen, since some light pens differ in this regard. To do this, type in this short program:

```
10 IF STICK(0)<>15 THEN PRINT "IF STICK(0)=15":END
20 IF STRIG(0)=0 THEN PRINT "IF STRIG(0)=1":END
30 IF PTRIG(0)=0 THEN PRINT "IF PTRIG(0)=1":END
40 GOTO 10
```

RUN this program, plug in the light pen, and press the button on the light pen. If IF STICK(0) = 15 is printed, you can use the light pen program as listed. If IF STRIG(0) = 1 is printed, then replace the IF STICK(0)><15 in line 100 of the Light Pen Program with this segment so that line 100 reads as follows:

```
100  IF STRIG(0)=1 THEN OX=200:FLAG=0:GOTO 90
```

If IF PTRIG(0) = 1 is printed, then change line 100 to read as follows:

```
100 IF PTRIG(0)=1 THEN OX=200:FLAG=0:GOTO 90
```

Now the program is ready for use.

Turn the brightness level of your television up, plug in the light pen, unplug everything else from the other joystick ports and RUN the Light Pen Program. You'll be asked to position the light pen on a white dot in the center of the screen. While holding the light pen over this dot, press RETURN. This sets the light pen for proper vertical and horizontal alignment.

Now the screen will turn white since the light pen can only read bright colors on the screen. Put the light pen to the screen and press the button when you want to draw. You can press 1, 2 or 3 for the colors sets by lines 40, 50 and 60 respectively. Pressing 4 gives you the background color and its effect is to erase the other colors. You can change the SETCOLOR statements on lines 40 through 60 to obtain the colors of your choice, but remember to use bright colors so that the light pen will be able to read them. If you've added the Graphics Dump Utility, you can press P to get a printout of the screen. If using the MPP-1100 printer interface (the kind that plugs into the third joystick port of the Atari 400 or 800) you'll have to unplug it from the joystick port while using the light pen. But be sure to plug it back in again when you are ready to print. Those using other interfaces need not worry about this. If you want to use your own BASIC graphics dump utility, merge your utility with the Light Pen Program and change the GOSUB 31000 in line 210 to GOSUB to the beginning line of your graphics dump. Or, if you have a machine language commercial printer dump utility, follow the directions for using it in conjunction with a BASIC program.

The sensitivity of the program to the light pen can be decreased or increased by respectively lowering or raising the value for the variable THRESHOLD on line 80. Generally, the better the quality of your light pen, the lower you should be able to set the THRESHOLD. As described last month, the threshold value is the amount of movement the light pen must register before the movement is actually plotted on the screen. If you are getting erratic plotting on the screen when you draw, you should raise the THRESHOLD level.

Figure 2 shows what happens when Jeff Brenner gets his hands on a light pen. The drawings were created with the Light Pen Program and printed out using the Graphics Dump Utility. (Yes, the third drawing was an attempt at the Atari logo.)

Have fun. If you print anything really nice, send it in and we'll try to print it.

Continued on page 136

LIGHT PEN PROGRAM

```
IAJ  10 REM LIGHT PEN DRAWING PROGRAM
IIJ  20 REM COPYRIGHT 1985 JB
LIJ  30 OPEN #2,4,0,"K:":GOSUB 230:GRAPHICS 7+16:COL=1
QNJ  40 SETCOLOR 0,4,10
QSJ  50 SETCOLOR 1,8,10
SNJ  60 SETCOLOR 2,13,10
QTJ  70 SETCOLOR 4,0,14
LIJ  80 THRESHOLD=4
SAJ  90 X=PEEK(564):Y=PEEK(565):IF PEEK(764)<255 THEN 200
FEJ 100 IF STICK(0)=15 THEN OX=200:FLAG=0:GOTO 90
NQJ 110 IF OLDX+OLDY=0 THEN 140
UXJ 120 IF ABS(OX-X)<THRESHOLD AND ABS(OY-Y)<THRESHOLD THEN 90
IYJ 130 OX=X:OY=Y
YOJ 140 POSX=X-XFIX:POSY=Y-YFIX
TFJ 150 TRAP 90:COLOR COL:PLOT POSX,POSY
DHJ 160 IF FLAG THEN PLOT OLDX,OLDY
DSJ 170 DRAWTO POSX,POSY
GDJ 180 OLDX=POSX:OLDY=POSY:FLAG=1
YWJ 190 GOTO 90
DQJ 200 GET #2,N:N=N-48:IF N>0 AND N<5 THEN COL=N
IJJ 210 IF CHR$(N+48)="P" THEN GOSUB 31000
YQJ 220 GOTO 90
FMJ 230 GRAPHICS 7:POKE 710,0:POKE 708,14:COLOR 1:PLOT 80,48
TPJ 240 PRINT "POSITION LIGHT PEN ON DOT AND PRESS"
BDJ 250 PRINT "PRESS THE SPACE BAR."
AHJ 260 GET #2,N
MHJ 270 X=PEEK(564):Y=PEEK(565)
QSJ 280 XFIX=PEEK(564)-80:YFIX=PEEK(565)-48
BRJ 290 RETURN
```

Preventive Maintenance
Continued from page 58

it is possible that two errors could occur simultaneously to produce a zero checksum error, yet the ROM will not work properly.

RAM is tested by writing different bit patterns into the memory locations, then reading them back making sure that what you read is what was written.

Unfortunately, it is possible that your RAM is pattern sensitive; that is, it might pass a test having alternating 10101010 and 01010101 patterns, yet fail a 10111010 pattern. As you can see, depending on the amount of RAM you wish to test, it could take quite a long time to run the bit pattern through every possible combination of 1's and 0's.

When it comes to testing the CPU or disk system, the fact that you can load anything off the diskette usually means that the CPU, memory, and disk system are working. Consider what the result would be if any of these did not work properly.

The other area that may present a problem is when using a logic probe. These useful gadgets are excellent for signal tracing, but the user should keep in mind that a single logic probe (like a multimeter or single-trace scope) can only indicate the **presence** or **absence** of a single signal on a single line.

In a computer, besides the presence of a signal, the most important parameter is relative signal timing. This means that if a gate needs two simultaneous signals to operate, then these two signals must be simultaneously applied (within a few nanoseconds) of each other. Any greater timing means that the gate will not work. Since a logic probe can indicate the presence of only one signal, you can now estimate its value.

Conclusion

There are some things you can do, and some things that **you should not do** - it all depends on your level of hardware expertise. Always keep in mind that if you are not very sure of what you are doing, it could cost you several hundred dollars to replace a 50-cent resistor. In the words of that immortal Abbot and Costello routine ..."Pay the man the $2." ●

Atari 520ST
Continued from page 127

an "operating environment" and I can't think of a better description.

The operating system for the ST is a rewrite of the CP/M 68K. The ST file structure is the same as that of the IBM PC. This is no accident, as GEM for the IBM has already been shipped, and the ST isn't really into production yet. The ST DOS goes so far as being able to execute DOS 2.0 type commands from the DOS level in the ST!)This does NOT mean that you can run MSDOS programs or dates, merely that the Command Words are the same.)

The user interface on the ST used in the Desktop is very much like a Macintosh, but in color. The Atari ST running GEM is faster than both the IBM XT and the AT, and is even faster than the Mac, which also uses the 68000 CPU. One reason for the speed of the ST is that it has a 16-bit wide data path, and the ST has a lot of custom chips in it so the CPU is free to run your program instead of having to keep track of the mouse position or worrying about doing disk transfers. Atari spend quite a bit of money to build these custom chips to keep the CPU humming along.

No Language For First STs!

If you had dreams of buying a 520ST and making a fortune selling a BASIC program you developed, forget it. The 520ST will not have any language supplied with it. It will only be useful for running canned programs until other companies supply languages for the machine. FORTH is sure to be available for the machine quickly, and Assemblers and Loaders for the machine may be out very shortly after the machine itself.

It remains to be seen if the lack of a language with the machine will kill sales of the machines. Early microcomputers came with no languages at all, just a front panel with a few switches and some pretty lights. It turned out that most people didn't like writing programs in machine language. Manufacturers soon learned that having BASIC in ROM would help their machines sell like hotcakes.

Ever since then, manufacturers have been including more and more software with their systems. The Osbourne 1 caused a stir by offering not just BASIC, but throwing in a Word Processor and a spreadsheet. It will be interesting to se what happens to the ST with

Continued on page 137

Applying The Atari

Continued from page 130

Programmable Numeric Keypad

Last month we typed in a program which let us use the Atari Numeric Keypad while programming. This month's program lets you redefine any of the keys on the keypad to your liking.

Type in the program listed under "Programmable Keypad" and plug in your Atari CX85 keypad. Before you run the program, press SYSTEM RESET to reset a register used by the keypad.

When the program is run, all the keys on the keypad will be listed on the left side of the screen. The computer will print "PRESS KEYPAD." Press the key on the keypad that you want to redefine. The particular key you press is highlighted on the left side of the screen and the message "PRESS KEYBOARD" is displayed. Now press the key on the keyboard that is to be defined by the key you pressed on the keypad. This key will be printed on the right side of the screen. You can program keys to function as the inverse video and the caps/lower keys as well as any of the others.

You only need to program the keys you wish to redefine. Keys which you do not program will retain their standard characters. Hence, you need not reprogram numbers one through nine, for example, each time you program the keypad.

When you've finished programming, press the START key and the redefined key data will be saved in memory and the program will end. Pressing keys on the keypad will now display the redefined characters.

Next Month

We'll look at more reader mail, plus we'll enter an amazing artificial intelligence program. You won't want to miss this one.

Reader's questions, comments and original contributions are welcome. Please enclose a self-addressed, stamped envelope (SASE) for a personal reply.

A cassette or diskette of the programs listed in this month's column is available from the author for $5.00, postpaid. Specify DOS 2 or DOS 3 when requesting a diskette.

Program Perfect is a utility used to check for typing errors in programs entered from this column. Readers may send a SASE for a listing or $5.00 for a cassette or diskette.

Address all correspondence to:

Jeff Brenner's
"Applying The Atari 8/85"
C/O *Computer Shopper*
P.O. Box F
Titusville, FL 32781-9990 ●

PROGRAMMABLE KEYPAD

```
OPJ 10 REM PROGRAMMABLE NUMERIC KEYPAD
KFJ 20 REM COPYRIGHT 1985 JEFF BRENNER
PHJ 30 DIM DEF(16),PR(16),KEY$(10),SP$(10):OPEN #1,4,0,"K:"
IGJ 40 SP$(1)=CHR$(32):SP$(10)=CHR$(32):SP$(2)=SP$
PMJ 50 RESTORE 200:FOR I=0 TO 16
SNJ 60 READ NUM:DEF(I)=NUM:PR(I)=-1:NEXT I
JOJ 70 RESTORE :TOT=0:FOR I=1536 TO 1607:READ NUM
OSJ 80 POKE I,NUM:TOT=TOT+I+NUM:NEXT I
VPJ 90 IF TOT=120212 THEN A=USR(1536):GOTO 250
GSJ 100 PRINT "ERROR - CHECK DATA":END
MTJ 110 DATA 104,162,006,160,011,169
NLJ 120 DATA 007,032,092,228,096,174
MRJ 130 DATA 016,208,240,006,202,134
NAJ 140 DATA 204,076,051,006,165,204
MMJ 150 DATA 240,002,208,023,230,204
MNJ 160 DATA 173,000,211,041,015,170
MFJ 170 DATA 173,001,210,201,001,240
NGJ 180 DATA 002,162,016,189,054,006
NPJ 190 DATA 141,252,002,076,098,228
MVJ 200 DATA 052,024,029,027,035,051
MRJ 210 DATA 053,048,043,031,030,026
MRJ 220 DATA 050,034,012,014,028,155
CPJ 230 DATA DELETE,4,5,6,NO,7,8,9,YES
ALJ 240 DATA 1,2,3,0,.,+ENTER,-,ESCAPE
ADJ 250 PRINT CHR$(125);"KEYPAD";CHR$(127);"KEYBOARD":PRINT
IHJ 260 FOR I=0 TO 16:READ KEY$:PRINT KEY$;:PRINT CHR$(127);
PLJ 270 IF PR(I)>-1 THEN PRINT CHR$(PR(I));
RPJ 280 PRINT :NEXT I
WAJ 290 POKE 84,23:PRINT "PRESS START WHEN FINISHED";
HDJ 300 POKE 85,2:POKE 84,21:PRINT CHR$(156);CHR$(157);"PRESS KEYPAD";
EFJ 310 GOSUB 450
LWJ 320 FOR I=0 TO 16:IF DEF(I)<>PEEK(764) THEN NEXT I:GOTO 300
JRJ 330 RESTORE 230:FOR J=0 TO I:READ KEY$:NEXT J
BCJ 340 POKE 85,2:POKE 84,I+2:FOR K=1 TO LEN(KEY$):CHR=ASC(KEY$(K,K))
XTJ 350 PRINT CHR$(CHR+128);:NEXT K:POKE 84,21
FNJ 360 POKE 85,2:PRINT "PRESS KEYBOARD";
TAJ 370 GOSUB 450:PR(I)=PEEK(764):POKE 84,I+2:POKE 85,15
XYJ 380 IF PR(I)=39 THEN PRINT "INV";:GOTO 440
CCJ 390 IF PR(I)=60 THEN PRINT "LOWR";:GOTO 440
COJ 400 IF PR(I)=124 THEN PRINT "CAPS";:GOTO 440
ADJ 410 GET #1,N
ATJ 420 IF N=155 THEN PRINT "RETURN";:GOTO 440
CAJ 430 POKE 766,1:PRINT CHR$(N);SP$;:POKE 766,0
FRJ 440 POKE 85,2:PRINT KEY$;:GOTO 300
JHJ 450 POKE 764,255
NWJ 460 IF PEEK(53279)=6 THEN 490
NHJ 470 IF PEEK(764)=255 THEN 460
BCJ 480 RETURN
RWJ 490 FOR I=0 TO 16:IF PR(I)>-1 THEN POKE 1590+1,PR(I)
IRJ 500 NEXT I
TOJ 510 A=USR(1536):PRINT :PRINT :PRINT :PRINT "PROGRAMMING COMPLETED"
QIJ 520 END
```

Atari 520ST
Continued from page 134

Atari bucking 10 years of tradition by not including BASIC with the machine.

I suspect that the lack of BASIC on the machine will mean that the people buying it will mainly be advanced programmers, real Atari supporters, and people that have no desire to do anything except run canned programs.

"Development System" or Target

Atari is claiming that the initial ST machines being sold are "Development Systems", but I prefer to call them "Target Systems." The main reason I don't believe the ST is a development system is that not all the tools you need to develop GEM software will run on the machine. At the present time, most people are developing application programs on an IBM PC using the Lattice C compiler and the GEM tools such as the resource construction toolkit. When the programs are debugged and working, they send the C source code over to the ST and recompile.

The main reason for this approach is that there are no tools on the ST for developing menu bars, icons or object trees and other graphic portions of an application program. The tools you need to develop these items are available in the IBM PC version of GEM. Digital Research indicates that a version of GEM for the Apple Lisa that has the ST as its target will be available this summer. This version could be converted to run on the ST itself very easily.

The initial production run of the 520 ST will be going to the people that paid $4500 for the first set of preproduction machines. They will also be offered to Atari user groups and software developers that wish to get in on the new machine. If you are planning to do software development on this machine, be sure you buy the system documentation and software from Atari. This gives you manuals on GEM, a C compiler and an assembler. This is the bare bones package required to write a program for the ST, and you will not have the tools you need to develop full GEM appli cations.

In order to really develop GEM programs on the ST, you'll need an IBM PC with 512K of RAM, a graphics card, a mouse, and the GEM toolkit along with the Lattice C compiler. You also need the 520ST system from Atari including the system documentation and software. Atari suggests, and I heartily agree, that you should also buy the second disk drive. (Maybe a hard disk, compiles can take forever with a floppy.) Also, attend the GEM seminar given by DRI. You may also want to buy a color monitor, but you could get by without it.

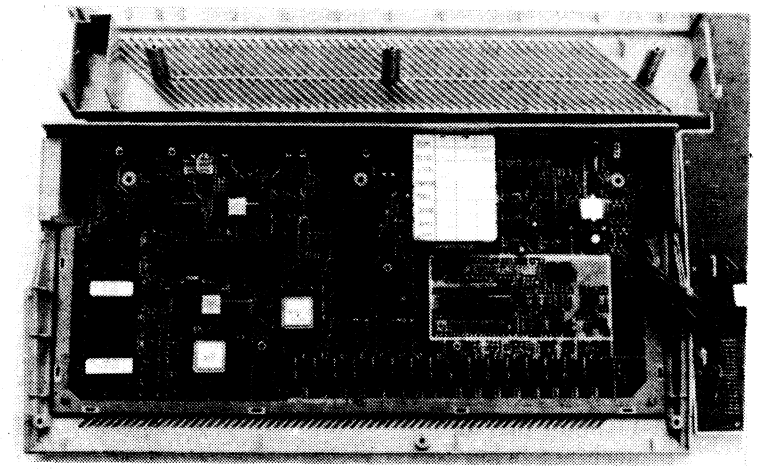
Conclusions

At the present time, the ST is not a machine for developers with a limited software background. The documentation on the system is weak, and the tools you need are available only on other systems. You have to know what you are doing, and you have to be able to ferret out answers that may be buried in manuals. In some cases, you have to be able to guess how things are done.

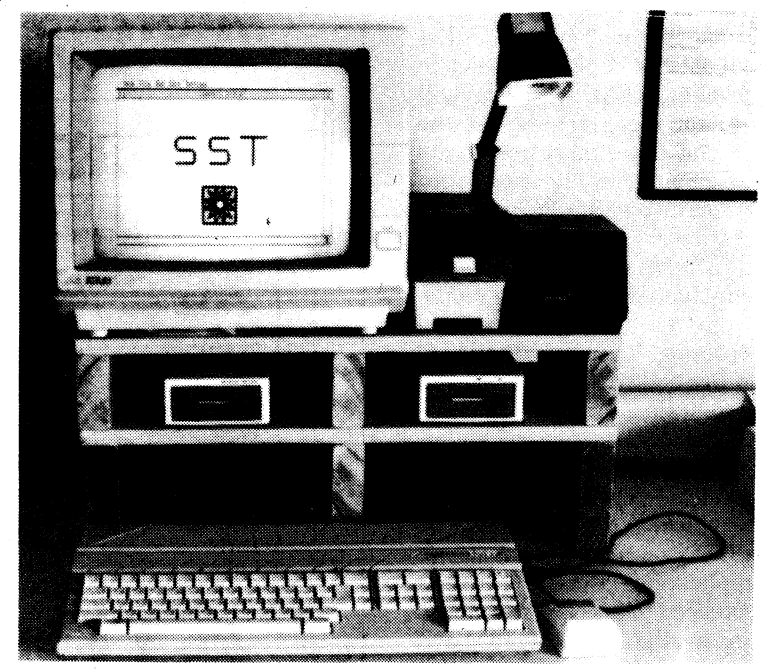
When the new ST wih the system software and BASIC and LOGO in ROM is out it should be extremely popular. This new machine should catch on like wildfire if Atari is able to hold the costs down, and there is really no reason why it should cost any more than the initial 520. I believe that with a little luck, the production system may make it to market in time for the Christmas rush.

Since GEM is running on the IBM PCs, and it is a graphics oriented interface, I expect it to become very popular with businesses. It is so easy for software publishers to move GEM programs from the IBM to the Atari. In the future people may use IBM PCs at work, and run the exact same program on an Atari at home.

This doesn't mean that the Atari is IBM compatible, only GEM programs written in C can be moved from the IBM to the Atari. Since the disk format and file structure is the same, you should be able to take a data disk from an IBM PC and throw it into the Atari and read away. Of course, IBM has to come out with a 3½ drive first, but before long.... ●



Inside The Atari 520ST



Atari 520ST System

Ballblazer

A Review by Jeff Brenner

Ballblazer is one of two programs designed by the Lucas film Games Division (yes, the Lucasfilm that brought us *Star Wars*. At one time, it appeared that both Ballblazer and the other program, Rescue on Fractalux, would never be marketed. The story behind these games is quite interesting.

Originally slated to be distributed by Atari, unprotected versions of these programs were "leaked" out to the public at some point in their development. These copies soon made their way to an Atari bulletin board, where they were quickly duplicated and shuffled across other bulletin boards. Before long, these programs were in the hands of Atari hackers all across the country. Naturally, the marketing potential for these games was severely damaged since so many already had copies, albeit illegal ones. Hence, Atari decided to drop its plans to market these games. Fortunately, Epyx purchased the rights to distribute these programs, and they are now available for both Atari and Commodore computers. In this article, I review Ballblazer, one of these excellent games.

Teamwork

Ballblazer is one of a new generation of programs designed by a team of specialized programmers. This teamwork enables the creation of programs of incredible complexity in a considerably shorter amount of time than would be possible by an individual programmer. Additionally, since each member of the team generally specializes and excels in one particular area of programming, such as animated graphics, the finished project can represent a combination of skills and talents unattainable by the single programmer. One look at this game in action reveals the attention to detail put into creating an exceptional illusion of motion and depth.

The Game

The game concept is surprisingly simple; it is best compared to a one-on-one soccer or hockey game. But the three-dimensional, animated graphics are incredibly complex and give the game an amazing level of playability and excitement.

Ballblazer situates you and an opponent (a human opponent or one of nine droids, each of a different skill level) into futuristic Rotofoil vehicles, which float at high speeds along the playing surface, a checkerboard type of grid. Once in your Rotofoil, you try to gain control of the Plasmorb (Lucasfilm Games' fancy name for "ball") which you can push along the playfield as you please. There is no physical contact between you and the ball. Rather, the ball hovers a short distance in front of your craft, held in place by what the manual describes as a "Pull field" forcefield.

You can also shoot the ball with a push of your joystick trigger. The "Pullfield" is changed into a "Pushfield" and the ball is quickly thrust away from your Rotofoil. This activity is referred to as "blasting the ball." Of course, your opponent can also get hold of the ball, in which case you would try to blast it away from his pullfield. You can then attempt to recapture the ball with your Rotofoil.

The Screen Displays

The screen is cleverly divided into two screens, on top and on bottom, so that each player can see the view from his own Rotofoil. This split-screen idea has already been employed in several two-player games, but Ballblazer effectively uses the double screen to show off the realism of the graphics. For example, as your Rotofoil heads toward your opponent's, you can glimpse at his display and see your own craft approaching it. If you collide into your opponents's Rotofoil, you'll note that his display perspective is changed as he is pushed by you.

Scoring The Points

As usual, to win you must score the most points. Specifically, scoring involves shooting the ball through the goal posts. But there are several ways to score.

Pushing the ball through the goal posts without actually shooting it, earns you one point. This is the surest way to score. Shooting the ball into the goal earns you two points, unless you decide to take an Over-The Horizon Shot. To take this shot, you keep your Rotofoil aligned with the goal posts and move far back until you can no longer see the goal. If you make this shot, you're awarded three points.

Blasting the ball through the goal posts becomes a greater challenge as the game progresses. After each point that is scored, the goal posts move closer together, making it more difficult to score.

When the timer runs out (the timer can be set for one to nine minutes) the person with the highest score wins and the loser's Rotofoil spins around in defeat. You can also win by scoring ten points. Since there are ten spaces for "score dots" on the screen, each of which is filled with the color of the scoring craft, as your score approaches ten, your opponent's score dots are removed to make room for yours (or vice versa). Hence, scoring ten points is an automatic shut-out, since your opponent would have none.

Game Design

I gave Lucasfilm Games' much credit in taking what could have been a quite complicated and tedious game to control, and instead making it amazingly simple to play. For example, your Rotofoil will automatically execute a "Rotosnap," or a 90 degree turn, so that you are always facing the ball. Hence, you can always find the ball on the expansive playfield by pushing the joystick forward. Once you've got the ball, your Rotofoil will perform another Rotosnap, if necessary, to face the goal so that you can score. The 90 degree turn also serves the purpose of enabling you to approach your opponent from the side to easily blast the ball away from him.

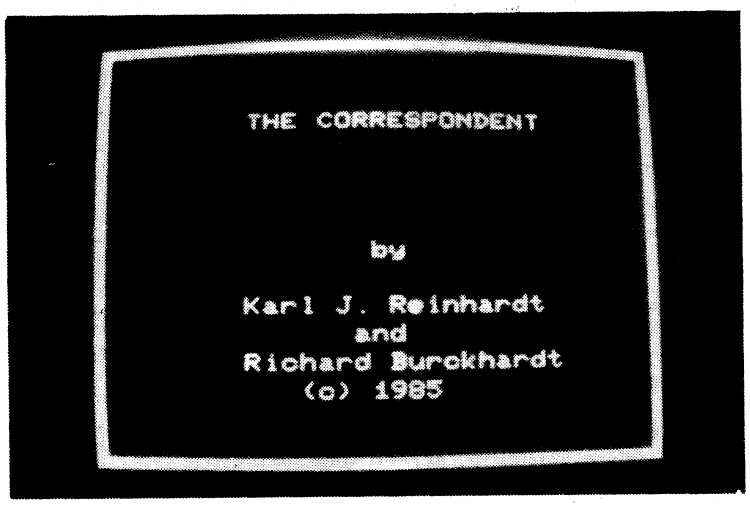
Doeumentation

The game itself is simple and easily understood. Pick up the joystick and you can catch on almost immediately, so little reading is required to play. In addition to the game play instructions, however, the manual contains a cute selection of short fictional stories and interviews with master Ballblazer players from space, which gives you hints on playing the game. It's quite enjoyable to read and gives you a good understanding of all aspects of the game.

Conclusion

$39.95 is a steep price to pay for such a game, but unfortunately those programming teams become expensive (not to mention registering the more than 25 trademarks associated with this game). Hopefully,

Continued on page 140



The Correspondent, Complete Mailing Software for TRS-80

Part 2

by Karl J. Reinhardt and Richard Burckhardt

Address Book Program

Address book is a random access address utility and mailing list program. It allows the user to create a data base of names, addresses, telephone numbers, birthdays and comments about addresses. The sort routine limits the size of the list to 700 entries.

Once data is entered, they can be searched by last name, birthday, comment or area code. The searches are done by character sequence. For instance, if your comment keyword to search for is "plumb,' then all references to "plumber" or "plumbing" or any word containing the sequence of characters in the keyword would be listed.

The first option on the Address Book menu, "Create a record," is used to enter new names. Entering <ZZZ> at the name prompt returns you to the menu. The data input routines here use LINEINPUT, so commas and colons can be used. Names should be entered last name first (Smith, John).

To edit a record, the second menu option is used. You MUST re-enter ALL data when editing. If you just correct the address and hit <ENTER> for the rest of the fields, the address will be the only field with information in it. The rest will be blank.

You can read individual records by their number with the "Read/print individual record" option. If you choose to print the record on the printer, it may be done as an address on an envelope or postcard, or as a rolodex card.

Continued on page 142

Ballblazer

Continued from page 139

you can find it discounted to a reasonable level; $29.95 is more like it.

Ballblazer's advanced animated graphics are some of the best I've seen in a long time. The realism of the graphics combined with the two-player action and excitement earn this game a spot on my "highly recommended" list (putting the price aside). I hope we get to see more games like this from Lucasfilm Games in the future.

Ratings ** Fair * Poor
**** Excellent *** Good
Design ****
Amusement Level ****
Documentation ****
Value **
Average ***½

Requirements

Atari 400/800/XL: 48K, disk drive.
Commodore 64: Disk Drive.
Program authors: Lucasfilm Games Division - David Levine, Peter Langston, David Riordan, Garry Hare, Charles Kellner, David Fox, and Gary Winnick.

Manufactured Suggested Retail Price: $39.95

Manufacturer: Epyx, Inc., 1043 Kiel Court, Sunnyvale, CA 94089●